

Write correct skeleton equations for these decomposition reactions, then balance. Pay attention to substances that react with water, the product will usually be dissolved in water. Unless you are told that a substance is a liquid or gas, assume that it is a solid. Label the reaction as redox or not.

1. Nickel(II) chlorate decomposes when heated.
2. Cesium carbonate decomposes upon heating
3. Silver oxide decomposes into its elements when heated
4. Gaseous dinitrogen trioxide and liquid water are the products of the decomposition of aqueous nitrous acid ( $\text{HNO}_2$ )
5. Iron(III) oxide and liquid water are the products from the decomposition of what?
6. Zinc carbonate decomposes when heated
7. Aqueous aluminum hydroxide decomposes on heating.
8. Aqueous sulfuric acid breaks apart into gaseous sulfur trioxide and water.
9. Rubidium chlorate decomposes upon heating.
10. Radium fluoride decomposes upon heating.

1. skeleton:  $\text{Ni}(\text{ClO}_3)_{2(s)} \rightarrow \text{NiCl}_{2(s)} + \text{O}_{2(g)}$   
 balanced:  $\text{Ni}(\text{ClO}_3)_{2(s)} \rightarrow \text{NiCl}_{2(s)} + 3 \text{O}_{2(g)}$  redox
2. skeleton:  $\text{Cs}_2\text{CO}_{3(s)} \rightarrow \text{Cs}_2\text{O}_{(s)} + \text{CO}_{2(g)}$   
 balanced: already balanced not redox
3. skeleton:  $\text{Ag}_2\text{O}_{(s)} \rightarrow \text{Ag}_{(s)} + \text{O}_{2(g)}$   
 balanced:  $2 \text{Ag}_2\text{O}_{(s)} \rightarrow 4 \text{Ag}_{(s)} + \text{O}_{2(g)}$  redox
4. skeleton:  $\text{HNO}_{2(aq)} \rightarrow \text{N}_2\text{O}_{3(g)} + \text{H}_2\text{O}_{(L)}$   
 balanced:  $2 \text{HNO}_{2(aq)} \rightarrow \text{N}_2\text{O}_{3(g)} + \text{H}_2\text{O}_{(L)}$  not redox
5. skeleton:  $\text{Fe}(\text{OH})_{3(aq)} \rightarrow \text{Fe}_2\text{O}_{3(s)} + \text{H}_2\text{O}_{(L)}$   
 balanced:  $2 \text{Fe}(\text{OH})_{3(aq)} \rightarrow \text{Fe}_2\text{O}_{3(s)} + 3 \text{H}_2\text{O}_{(L)}$  not redox
6. skeleton:  $\text{ZnCO}_{3(s)} \rightarrow \text{ZnO}_{(s)} + \text{CO}_{2(g)}$   
 balanced: already balanced not redox
7. skeleton:  $\text{Al}(\text{OH})_{3(aq)} \rightarrow \text{Al}_2\text{O}_{3(s)} + \text{H}_2\text{O}_{(L)}$   
 balanced:  $2 \text{Al}(\text{OH})_{3(aq)} \rightarrow \text{Al}_2\text{O}_{3(s)} + 3 \text{H}_2\text{O}_{(L)}$  not redox
8. skeleton:  $\text{H}_2\text{SO}_{4(aq)} \rightarrow \text{SO}_{3(g)} + \text{H}_2\text{O}_{(L)}$   
 balanced: already balanced not redox
9. skeleton:  $\text{RbClO}_{3(s)} \rightarrow \text{RbCl}_{(s)} + \text{O}_{2(g)}$   
 balanced:  $2 \text{RbClO}_{3(s)} \rightarrow 2 \text{RbCl}_{(s)} + 3 \text{O}_{2(g)}$  redox
10. skeleton:  $\text{RaF}_{2(s)} \rightarrow \text{Ra}_{(s)} + \text{F}_{2(g)}$   
 balanced: already balanced redox